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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,789	02/10/2004	Robert K. Smither	0003/01475	9358

7590 10/12/2005

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EXAMINER

KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/775,789	SMITHER, ROBERT K.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings were received on 8/1/05. These drawings are acceptable.

Claim Objections

2. Claims 1, 4, and 10 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 1, line 4, "the required resolution"; replacing "the" with - -a- -), (claim 1, line 11, "focussing"; replacing "focussing" with - -focusing- -), (claim 1, line 11, "said radiation"; deleting "said"), (claim 1, line 14, "said focused radiation"; replacing "said" with - -the- -), (claim 4, lines 2-3, "said cut crystals"; replacing "said" with - -the- -), (claim 10, line 7, "focussing"; replacing "focussing" with - -focusing- -), and (claim 10, lines 12-14, "radiation; d) a means for converting"; inserting - -and- - after "radiation;").

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7, and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Smither (US Patent 5869841).

4. Regarding claim 1, Smither discloses a method comprising necessarily determining a required resolution (prior to constructing the device of fig. 1), supplying a plurality of sources of radiation (col. 5, lines 48-54), supplying an aperture (fig. 6, #42) downstream from each source, said aperture having a width approximately equal to the required radiation (col. 10, line 24), focusing radiation onto one or more detector assemblies (fig. 1, #19) by means of diffracting crystals (fig. 1, #18) having a width (col. 10, line 24) not exceeding the required resolution (col. 4, lines 6-7), analyzing the focused radiation to collect data as to the type and location (col. 14, line 20) of the radiation source (col. 13, lines 32-33), and producing an image using the data (col. 13, line 34).

5. Regarding claim 10, Smither discloses a device comprising a means for locating (col. 14, line 20) sources of radiation (col. 13, line 34), a plurality of diffracting crystals (fig. 1, #18, and fig. 6, #42) of a width not exceeding a predetermined resolution (col. 10, line 24) for focusing the radiation emanating from the located sources and directing the radiation to a plurality of detectors (fig. 1, #19), with the size of each said detector equal to or smaller than the resolution (col. 13, lines 50-51), detector arrays (fig. 1, #19) for analyzing the directed radiation to collect

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data as to the type and location of the source of radiation (col. 13, lines 32-33), and a means for converting the data to an image (col. 13, line 34).

6. Regarding claims 2 and 14, Smither further discloses the step of supplying said sources further comprising contacting a body with a radioisotope (col. 5, lines 43-54, and col. 13, lines 21-23).

7. Regarding claim 3, Smither further discloses wherein said image is produced by an array of detectors (fig. 1, #19).

8. Regarding claim 4, Smither further discloses cutting said crystals in thin slabs and bending the cut crystals to assume the shape of circular arcs (col. 13, lines 40-43).

9. Regarding claim 5, Smither further discloses the width as 1mm or less (col. 10, line 43).

10. Regarding claim 7, Smither further discloses wherein the step of analyzing said focused radiation further comprises directing said focused radiation to a plurality of detectors (fig. 1, #19) of a size equal (col. 13, line 51) to or smaller than the required resolution.

11. Regarding claim 9, Smither further discloses placing at least one of said sources at precisely known locations (col. 13, lines 52-55).

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12. Regarding claim 11, Smither further discloses means for locating sources as a plurality of scintillation devices (col. 14, lines 8-9).

13. Regarding claim 12, Smither further discloses diffracting crystals forming a plurality of lenses (col. 14, lines 10-11).

14. Regarding claim 13, Smither further discloses the diffracting crystals (col. 6, lines 29-30) and sources (fig. 1, #15 and 16) being movable.

15. Regarding claim 15, Smither further discloses each lens comprising a plurality of crystals and wherein said plurality of crystals are oriented so as to diffract radiation of a predetermined energy to the same focal point (col. 14, lines 28-31).

16. Regarding claims 16 and 17, Smither further discloses crystals mounted in concentric rings onto a substrate (col. 14, lines 42-43) and bent (col. 12, line 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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17. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smither as applied to claims 1 and 10 above.

Smither discloses a method and device as recited above. Smither further discloses selecting crystals to have random imperfections and dislocations (fig. 5a) that produce an acceptance angle (i.e. rocking angle), which can be increased (col. 8, lines 9-15) from only a few seconds of arc (col. 8, lines 4-6).

However, Smither does not disclose an angle between 50 and 150 seconds of arc.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method and device of Smither with the angle between 50 and 150 seconds of arc, since discovering a workable range involves only routine skill in the art. One would be motivated to make such a modification to compact the device (col. 8, lines 4-8) as implied from Smither.

18. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smither as applied to claims 1 and 10 above, and further in view of Hura (US Patent 4246488).

Smither discloses a method and device as recited above. Smither further discloses apertures smaller than the required resolution (col. 10, line 24) in front of said detectors (fig. 1, #19) and adjusting the position and width of said apertures to improve said imaging (fig. 3, #22).

However, Smither does not disclose positioning a collimator.

Hura teaches positioning a collimator (col. 4, line 12).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method and device of Smither with the collimator of

Hura, since one would be motivated to make such a modification to minimize radiation exposure (col. 1, lines 31-33) as shown by Hura.

19. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smither as applied to claim 10 above, and further in view of Yamashita et al. (WO 03/018131).

Smither discloses a device as recited above. Smither further discloses directing focused radiation to a plurality of detectors (fig. 1, #19).

However, Smither does not disclose a detector with a resolution of 1mm or less.

Yamashita et al. teaches a detector with a resolution of 1mm or less (page 13, lines 6-11).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Smither with the detector of Yamashita et al., since one would be motivated to make such a modification to increase sensitivity (page 13, lines 6-11) as implied from Yamashita et al.

See US Patent Application Publication 2004/0174949 (paragraph 88) for a translation of page 13, lines 6-11, in Yamashita et al.

Response to Arguments

20. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed 8/1/05 have been fully considered but they are not persuasive.

Regarding Smither, Smither still reads on present claims.

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Regarding Hura and Yamashita et al. and in response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Hura teaches using collimators in imaging to reduce radiation. Yamashita et al. teaches using smaller detectors in imaging to increase detector sensitivity. It would have been obvious to incorporate these ideas into the imaging of Smither. Therefore, Applicant's arguments are not persuasive, and the prior art remains applicable.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gk



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